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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/507,332 | 09/10/2004 | Jean-Claude Six | FR 020019 | 4007 |

24737 7590 11/22/2005

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| EXAMINER |
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JOHNSON, JONATHAN J

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| ART UNIT | PAPER NUMBER |
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1725

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/507,332

Applicant(s)

SIX, JEAN-CLAUDE

Examiner

Jonathan Johnson

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 951068 (Tillmans) in view of US 4,604,644 (Beckham). Tillmans teaches a method for connecting a connecting surface of a first silicon wafer with a connecting surface of a second silicon wafer so as to form an insulated cavity after assembly, at least one of the two silicon wafers including at least one functional area intended to be within the cavity (col. 1, ll. 15-20), said method being characterized in that it includes the steps of: depositing alloy soldering on the connecting surface of the first silicon wafer (figure 5, item 3), reflux soldering in order to connect the two silicon wafers by melting of the solder (col. 5, l. 11) the two silicon wafers include functional etchings (figure 5, item 1 and 5) step of filling the cavity with an inert gas (col. 6, ll. 5-10). Beckham teaches solder being separated from one another by an even distance which is sufficiently small to cause joinings during the assembly of the two silicon wafers the said deposition of the soldering bumps being carried out during the step of depositing the soldering bumps intended for the electrical contacts; including a step of applying a resin to the contour of the cavity (figure 6, item 13 and item 30), the two silicon wafers include functional etchings (figure 6 items 10 and 6) It would have been obvious to one of ordinary skill in the art at the time of the invention to

Art Unit: 1725

modify the method of Tillmans to utilize the solder bump/underfill material at the periphery of the cavity in order to increase the number of I/O terminals (see Beckham col. 1, ll. 35-45).

Response to Arguments

Applicant argues Beckham fails to teach the claim 1 limitation "bumps being separated from one another by an even distance which is sufficiently small to cause joinings." The examiner disagrees. As stated in the previous office action, Beckman teaches the bumps being separated from one another (figure 6, item 13) by an even distance (figure 6, space between item 13) which is sufficiently small to cause joining (figure 5, item 13, where a plurality of joinings are formed throughout the substrate). The examiner notes this interpretation is consistent with applicant's specification as the second soldering wafer WA2 is placed in contact with the soldering bumps and then heated to reflow the bumps (see applicant's specification, paragraph 27).

Applicant next argues Beckham teaches away from the limitation because the solder terminals do not cause joinings during assembly (see page 4 of applicant's arguments). Applicant, however, provides no citation other than a general reference to figures 4a and 5 of Beckham to support his assertion. The examiner cannot agree with applicant. It appears applicant has misinterpreted the teachings of Beckham. Beckman teaches reflowing the solder to form joinings (abstract and col. 3, l. 65 to col. 4, l. 40). In addition, however, Beckman uses a dielectric material to assist the bonded solder terminals from pulling away from the substrate (col. 6, ll. 5-20).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Johnson whose telephone number is 571-272-1177. The examiner can normally be reached on M-Th 7:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1725

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Johnson
Primary Examiner
Art Unit 1725

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